

REMARKS

This is in response to the Office Action mailed on July 23, 2004. No claims are amended, canceled, or added. Thus, claims 1-6, 8-61, 63-78, 80-84 and 117-134 remain pending in this application. Of these pending claims, claims 3, 5, 6, 8-13, 15-17, 20-55, 58, 60, 61, 64-72, 75, 77, 78, 81-83, 117-124, 128-131, 133 and 134 currently stand withdrawn.

Information Disclosure Statement

Applicant submits a Supplemental Information Disclosure Statement and a 1449 Form with this Response. Applicant respectfully requests that an initialed copy of the 1449 Form be returned to Applicants' Representatives to indicate that the cited reference has been considered by the Examiner.

§103 Rejection of the Claims

Claims 1-2, 14, 56-57, 63, 73-74, 80, and 84 were rejected under 35 USC § 103(a) as being unpatentable over Shimoji et al. (U.S. 5,332,915) in view of Bass, Jr. et al. (U.S. 4,870,470). Applicant respectfully traverses for at least the following reasons.

Applicant is unable to find, among other things, in the cited portions of the Shimoji et al. and the Bass, Jr. references, either a showing or a fair suggestion of a gate stack with a tunnel medium, a high K charge blocking and charge storing medium disposed on the tunnel medium, and an injector medium operably disposed with respect to the tunnel medium and the high K charge blocking and charge storing medium to provide charge transport by enhanced tunneling, as recited in independent claims 1, 56, 73 and 84. Thus, Applicant respectfully submits that these independent claims are in condition for allowance, along with their dependent claims.

Applicant respectfully asserts that the rejection fails to provide a prima facie case of obviousness, which requires the establishment of (1) some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or to combine reference teachings; (2) a reasonable expectation of success; and (3) a showing in the reference or combination of references all of the claim limitations. MPEP §§ 2143 -2143.03. The claim must be considered as a whole, and the reference must be considered as a whole and must suggest the desirability of making the

combination. MPEP §2141. The Examiner normally cannot be compelled to appear in legal proceedings to explain his thought process; thus, the office action should set forth the rationale for the rejection with reasonable specificity, including the following: (1) the relevant teaching of the references relied upon, preferably with reference to the relevant column or page number(s) and line number(s) where appropriate; (2) the difference or differences in the claim over the applied reference(s); (3) the proposed modification of the applied reference(s) necessary to arrive at the claimed subject matter; and (4) an explanation why one of ordinary skill in the art at the time the invention was made would have been motivated to make the proposed modification. MPEP §706.02(j).

In the first paragraph of page 3, the rejection states: *Bass, Jr. et al. discloses a gate stack (Fig. 6) comprising a high dielectric film 35 of silicon rich nitride (SRN) between a control gate 40 and a high K charge blocking and charge storing medium 30, the high dielectric film 35 of SRN forming an injector medium. SRN is a high dielectric film having a dielectric constant of greater than or equal to 12. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to use SRN as a suitable high dielectric material for the high dielectric film 2 to further provide good charge injecting properties that provide appreciably enhanced charge conductance (see col. 8, lines 5-12 and lines 37-40).* Applicant respectfully traverses.

Applicant respectfully submits that it cannot be fairly stated that one of ordinary skill in the art would be motivated, based on the references taken on the whole, to substitute an injector medium such as injector SRN for the high dielectric layer 2 of Shimoji et al. to form the claimed subject matter taken on the whole.

Applicant traverses the assertion that it would have been obvious “to use SRN as a suitable high dielectric material for the high dielectric film 2 to further provide good charge injecting properties that provide appreciably enhanced charge conductance.” Applicant is unable to find a fair suggestion that one of ordinary skill in the art would consider the injector medium and the high dielectric film 2 to be interchangeable. Injector SRI, for example, has silicon centers that are within tunneling distance of each other such that charge can readily communicate between the charge centers, is characterized by high conductivity and behaves like semi-metal, and uniformly injects charges into the insulator when biased to reduce local field

fluctuations due to defects, and enhance tunneling at significantly reduced average fields (Applicant's specification at page 2 lines 10-22). Shimoji et al. states that the high dielectric film prevents the penetration of electrons into the electrode and the flow of positive holes from the electrode (col. 1, lines 56-59; col. 3, lines 6-10). Thus, Applicant respectfully submits that Shimoji et al. teaches away from using an injector medium.

Should the rejection be maintained, Applicant respectfully requests the Examiner to provide such information or references as may be useful in aiding Applicant to judge the propriety of continuing in the prosecution. (37 CFR § 1.104(a)(2)). Applicant respectfully requests the Examiner to support the characterization that the structure 35 in Bass, Jr. is a "high dielectric film" and to support the assertion that SRN is a high dielectric film having a dielectric constant of greater than or equal to 12 by identifying the portion(s) of a reference relied upon with reasonable specificity (column, page, line numbers where appropriate).

Applicant respectfully requests withdrawal of the rejection, and reconsideration and allowance of the claims.

Claims 4, 18-19, 59, and 76 were rejected under 35 USC § 103(a) as being unpatentable over Shimoji et al. (U.S. 5,332,915) in view of Bass, Jr. et al. (U.S. 4,870,470) as applied to claims 1, 56, 73, and 84 above, and further in view of Sadd et al. (U.S. 6,444,545). Applicant respectfully traverses for at least the following reasons.

Applicant is unable to find, among other things, in the cited portions of the Shimoji et al., Bass, Jr., and Sadd et al. references, either a showing or a fair suggestion of a gate stack with a tunnel medium, a high K charge blocking and charge storing medium disposed on the tunnel medium where the high K charge blocking and charge storing medium includes nano crystals for providing charge trapping charge centers, and an injector medium operably disposed with respect to the tunnel medium and the high K charge blocking and charge storing medium to provide charge transport by enhanced tunneling, as recited in independent claim 18. Thus, Applicant respectfully submits that independent claim is in condition for allowance, along with its dependent claims.

The reasons provided above with respect to the Shimoji et al. and Bass, Jr. et al. references are applicable here as well. Additionally, in the first full paragraph of page 5, the

rejection states: *It would have been obvious to a person having ordinary skill in the art at the time the invention was made to form the high K charge blocking and charge storing medium 4 including nano crystals as taught by Sadd et al. so that much of the charge would remain in the storage medium 4 due to trapping in the nano crystals. As a result, charge leak off from the medium 4 would be reduced.* Applicant respectfully traverses, and requests the Examiner to identify the portion(s) of a reference relied upon with reasonable specificity (column, page, line numbers where appropriate) to support the asserted motivation. Applicant is unable to find a showing or fair suggestion in Shimoji et al. to provide a gate stack with a high K dielectric with nano crystals, and is unable to find a showing or fair suggestion in Sadd et al. to provide a gate stack with nano crystals in a high K dielectric. Furthermore, Applicant respectfully submits that, when each claim and each reference are properly considered as a whole, the Shimoji et al. reference, the Bass, Jr. et al. reference and the Sadd et al. reference do not fairly suggest the desirability of making the combination recited in the claims.

Applicant respectfully requests withdrawal of the rejection, and reconsideration and allowance of the claims.

Allowable Subject Matter

Claims 125-127 and 132 were allowed.

Reservation of the Right to Swear Behind References

Applicant maintains its right to swear behind any references which are cited in a rejection under 35 U.S.C. §§102(a), 102(e), 103/102(a), and 103/102(e). Statements distinguishing the claimed subject matter over the cited references are not to be interpreted as admissions that the references are prior art.

Reconsideration of Withdrawn Claims

In accordance with 37 CFR 1.141, Applicant respectfully requests consideration of the claims that were withdrawn as being directed to a non-elected species upon the allowance of claim 1 or any other claim that is determined to be generic. Applicant respectfully asserts that claim 1 is in condition for allowance. Pursuant to MPEP §809.02(e), should the Examiner allow a generic claim but find that a claim directed to a species is not in the required form, Applicant reminds the Examiner of its rights to be notified of allowance of a generic claim and be given a time frame to conform all of the claims to the nonelected species to fully embrace an allowed generic claims.

When the application is otherwise ready for issue and there is an allowed generic claim, and applicant has not be previously notified as to the allowance of a generic claim, applicant must be advised of the allowance of the generic claim and given a time limit of 1 month (not less than 30 days) to conform all of the claims to the nonelected species to fully embrace an allowed generic claim or the examiner will cancel the claims to each nonconforming species by examiner's amendment and pass the application to issue. MPEP 809.02(c).

Conclusion

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (612) 373-6960 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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By his Representatives,

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Date 10-20-04

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: MS Amendment, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 20 day of October, 2004.

KACIA LEE
Name

Kacia Lee
Signature